

**What is claimed is:**

1. An activation method of a communications apparatus  
that have both a feedback loop and a non-linear  
5 distortion compensation device with a function to  
generate/update a distortion compensation  
coefficient, comprising:  
(a) opening the feedback loop;  
(b) adjusting both a level and a phase of an analog  
10 signal of the communications apparatus;  
(c) closing the feedback loop; and  
(d) generating/updating the distortion  
compensation coefficient.
- 15 2. The activation method according to claim 1, further  
comprising:  
(e) activating a digital section of said  
communications apparatus prior to step (a); and  
(f) activating an analog section of said  
20 communications apparatus between steps (a) and  
(b).
3. The activation method according to claim 1, wherein  
said level adjustment is made to offset gain of an  
25 amplifier for amplifying a signal in order to

transmit radio waves of said communications apparatus.

4. The activation method according to claim 1, wherein  
5 said phase adjustment is made to adjust analog signal delay that is caused in the analog section of said communications apparatus and to match in timing a signal transmitted via a feedback loop with a signal directly inputted to said non-linear distortion  
10 compensation device.
5. The activation method according to claim 1, wherein  
said communications apparatus conducts multi-carrier transmission, said activation method,  
15 further comprising  
(g) adjusting both amplitude and phase of a signal for each carrier.
6. The activation method according to claim 5, wherein  
20 step (b) is performed using a central frequency of a band occupied by the plurality of carriers as a whole.
7. The activation method according to claim 1, wherein  
25 said generation/update of a distortion compensation

coefficient is made using a test signal.

8. The activation method according to claim 1, wherein  
said communications apparatus is composed of a  
5 plurality of transmitting systems, forms a feedback  
loop by sequentially switching the plurality of  
transmitting systems and generates/updates the  
distortion compensation coefficient.
- 10 9. The activation method according to claim 1, wherein  
a plurality of generation/update steps of the  
distortion compensation coefficient can be set.
10. The activation method according to claim 9,  
15 wherein the generation/update step of the distortion  
compensation coefficient is set to a minimum and  
a level of a signal to be used to generate/update  
the distortion compensation coefficient is changed  
in multi-steps from the minimum value and the  
20 distortion compensation coefficient is  
generated/updated by gradually increasing the  
level.
11. The activation method according to claim 1,  
25 wherein a value measured in advance is used as an

initial value for said generation/update of a distortion compensation coefficient.

12. The activation method according to claim 1,  
5 wherein all coefficients are set to  $1+j0$  ( $j$  is the imaginary unit) as an initial value for said generation/update of a distortion compensation coefficient.

10 13. The activation method according to claim 1,  
wherein convergence of a generation/update process of the distortion compensation coefficient is judged by detecting size of a difference signal between a signal directly inputted to said non-linear  
15 distortion compensation device and a signal which is transmitted via said feedback loop and the level of which is adjusted.

14. The activation method according to claim 1,  
20 wherein convergence of a generation/update process of the distortion compensation coefficient is judged by detecting an out-of-band radiation level of a signal immediately before being transmitted from said transmitting unit.

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15. The activation method according to claim 1,  
wherein if said non-linear distortion compensation  
device is switched off and is switched on again,  
a value immediately before said non-linear  
5 distortion compensation device is switched off is  
used as an initial value for said level adjustment  
and phase adjustment processes in step (b).

16. The activation method according to claim 1,  
10 wherein a transmitting side of said communications  
apparatus comprises an antenna and a signal  
termination unit with the same impedance as that  
of the antenna, and generates/updates the distortion  
compensation coefficient while terminating a signal  
15 used to generate/update the distortion compensation  
coefficient at the signal termination unit.

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